



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,881	09/22/2003	William Charles Lynch	046395-0125	4249
31824	7590	10/30/2006	EXAMINER	
MCDERMOTT WILL & EMERY LLP			LEUNG, WAI LUN	
18191 VON KARMAN AVE.				
SUITE 500			ART UNIT	
IRVINE, CA 92612-7108			PAPER NUMBER	
			2613	

DATE MAILED: 10/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/664,881	Applicant(s) LYNCH ET AL.	
	Examiner Danny Wai Lun Leung	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. Applicant is reminded of the proper content, language, and format for an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet **within the range of 50 to 150 words**. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because **it contains only 39 words**.

Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to **enable** one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In order to enable optical communication over vast distances between planets such as between Jupiter and Earth, a powerful laser beam is required. The specification fails to disclose any laser structure which is powerful enough to deliver such high power or energy beam to enable optical communications between planets. Without such disclosure, the specification is non-enabling for claims 1-22.

In addition, it appears that the claimed invention requires space ships or rockets to deploy the invention for operation. The specification fails to disclose any method of deploying the systems and to maintain the system in alignment in order to enable optical communications. Without such disclosure, the claimed invention is not operable.

Art Unit: 2613

5. Claims 1-9, and 15-22 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. Means for providing optical and/or RF communication over vast distances such as a powerful laser transmitter or a sensitive receiver are critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

Claims 1, 2, 4, 8, and 9, fail to recite optical transmitting and receiving means for establishing the optical communications link.

Claim 3 fails to recite radio frequency transmitting and receiving means for establishing the radio frequency communications link.

Claims 15 and 22 fail to recite the means for receiving, converting, transmitting, and processing the communication signal.

Claims 16 and 18 fail to recite optical receiving, converting, and transmitting means for the communication signal.

Claims 17, and 19 fail to recite radio frequency receiving, converting, and transmitting means for the communication signal.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 5-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 5 and 10, the phrase "adapted to" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. The claims fail to positively recite the necessary steps and limitations as to how "*the Earth [is] adapted to receive communications from the planetoid and adapted to transmit communications to a user on earth*" as recited in claim 5, and how "*a payload [is] adapted to communicate between a location in deep space and an Earth user*" as recited in claim 10.

See MPEP § 2106, § 2111.04 [R-3]. Also see *Minton v. Nat 'l Ass 'n of Securities Dealers, Inc.*, 336 F.3d 1373, 1381, 67 USPQ2d 1614, 1620 (Fed. Cir. 2003).

Claim 8 recites the limitation "the orbit" in lines 1-2 on page 13. There is insufficient antecedent basis for this limitation in the claim.

8. Claims 6-9 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are the step or steps that link the step of claim 6 or 8 to independent claim 1.

Claim 6 recites the limitation "wherein placing a planetoid in an orbit about the sun further comprises..." in lines 19-20 on page 12. There is no interrelation between such step in claim 6 and the steps in claim 1.

Claim 8 recites the limitation "the placing the planetoid in the orbit about the Sun" in lines 1-2 on page 13. There is no interrelation between such step in claim 8 and the steps in claim 1.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1, 2, 4, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by **Christopher** (*US 20020181059A1*).

Regarding claim 1, **Christopher** teaches a method of deep space communication between a deep space location and Earth (*fig 23*), comprising: communicating between a planetoid and the deep space location via an optical communications link (*paragraph 76 describes a high data rate communication using a laser from Bangor, Me. up to a satellite, and then down to Oslo, Norway*); and communicating between a user and the planetoid (*a user from Bangor, Me. to “a location” such as Norway at “the planetoid” such as earth*).

As to claim 2, **Christopher** further teaches wherein the communicating between the user and the planetoid further comprises communicating between the user and a satellite (*as shown in fig 23, user in Bangor, ME communicates with the Molmiya Satellite*) in an orbit about the Earth (*paragraph 73*) and communicating between the satellite and the planetoid (*between the satellite and earth, where earth is a planetoid*).

As to claim 4, **Christopher** further teaches wherein communicating between the user and the planetoid further comprises communicating using an optical communications link (*paragraph 52*).

As to claim 6, **Christopher** further teaches wherein placing a planetoid in an orbit about the Sun (*paragraph 10*) further comprises placing a plurality of planetoids in an orbit about the Sun (*fig 17; paragraph 20*).

11. Claims 1, 3, 15-19 are rejected under 35 U.S.C. 102(b) as being anticipated by **Kintis et al.** (*US005661582A*).

Regarding to claim 1, **Kintis** teaches a method of deep space communication between a deep space location and Earth (*fig 1*), comprising: communicating between a planetoid (*12, fig 1*) and the deep space location (*26, fig 1*) via an optical communications link (*Optical Crosslink, fig 1*); and communicating between a user and the planetoid (*col 3, ln 29-39*).

As to claim 3, **Kintis** further teaches wherein communicating between the user and the planetoid further comprises communicating using a radio frequency communications link (*col 3, ln 14-27, also shown in fig 1*).

Regarding to claims 15-19, **Kintis** discloses a method of deep space communication using at least one planetoid to communicate between a deep space location and a user (*fig 1*), the method comprising: receiving a communication signal in a first data format (*which may be RF or Optical, col 3, ln 64-66*); converting the communication signal into a second data format (*col 4, ln 16-18*); and transmitting the communication signal in the second data format (*which may be optical or RF, col 6, ln 7-9*).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Applicant may overcome the applied art either by a showing under 37 CFR 1.132 that the invention disclosed therein was derived from the invention of this application, and is therefore, not the invention "by another," or by antedating the applied art under 37 CFR 1.131.

14. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Kintis et al.** (*US005661582A*), in view of **Franchini** (*US 4928317*).

Regarding claim 5, **Kintus** discloses the method in accordance to claim 1 as discussed above. **Kintus** further discloses the method further comprising employing a satellite (*26, fig 1*) adapted to receive communications from the planetoid (*12, fig 1*). **Kintus** does not disclose expressly wherein the satellite is in an orbit about the Earth and adapted to transmit

Art Unit: 2613

communications to a user on Earth. **Franchini**, from the same field of endeavor, teaches satellites that are in an orbit (*14, fig 1*) about the Earth and adapted to transmit communications to a user on Earth (*10, 11, fig 1*), as well as with other satellites (*fig 1 shows satellite 12 communicates with satellite 13 via optical link 18*). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to employ **Franchini**'s satellite to receive communication from **Kintis**'s planetoid so as to communicate with a user on earth as taught by **Franchini**. The motivation for doing so would have been to provide high data rate satellite transmission to users on Earth as suggested by **Franchini**.

15. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Christopher** (*US 20020181059A1*), as applied to claim 1, and further in view of **Guo** (*US006622970B2*).

Regarding claim 8, **Christopher** discloses the method in accordance to claim 1 as discussed above. **Christopher** further teaches wherein placing a planetoid in an orbit about the Sun (*paragraph 10*). **Christopher** does not disclose expressly wherein the placing the planetoid in the orbit about the Sun further comprises placing the planetoid in a substantially similar orbit to the Earth's orbit about the Sun. **Guo**, from the same field of endeavor, teaches placing the planetoid in a substantially similar orbit to the Earth's orbit about the Sun (*fig 1*). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to place the planetoid at an orbit that is similar to the Earth's orbit about the sun onto **Christopher**'s system as taught by **Guo**. The motivation for doing so would have been to utilize the similar gravitational force that is experienced by the earth from the sun onto the planetoid such that the planetoid can move at the same pace as the earth.

Art Unit: 2613

As to claim 9, **Guo** further teaches wherein a plane of the orbit substantially similar to Earth's orbit is tilted with respect to a plane of the Earth's orbit about the Sun (*fig 6*).

16. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kintis et al.** (*US005661582A*), as applied to claim 1, and further in view of **Guo** (*US006622970B2*).

Regarding claim 8, **Kintis** discloses the method in accordance to claim 1 as discussed above. **Kintis** does not disclose expressly placing the planetoid in the orbit about the Sun or placing the planetoid in a substantially similar orbit to the Earth's orbit about the Sun.

Guo, from the same field of endeavor, teaches placing the planetoid in a substantially similar orbit to the Earth's orbit about the Sun (*fig 1*). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to place the planetoid at an orbit that is similar to the Earth's orbit about the sun onto **Kintis's** system as taught by **Guo**. The motivation for doing so would have been to utilize the similar gravitational force that is experienced by the earth from the sun onto the planetoid such that the planetoid can move at the same pace as the earth.

As to claim 9, **Guo** further teaches wherein a plane of the orbit substantially similar to Earth's orbit is tilted with respect to a plane of the Earth's orbit about the Sun (*fig 6*).

17. Claims 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Guo** (*US006622970B2*), in view of **Franchini** (*US4928317*).

Regarding claim 10, **Guo** discloses **Guo** teaches a planetoid system orbiting the Sun (*fig 1*) comprising: a satellite health module for maintaining a planetoid in an orbit (*col 7, ln 1-19*); a

Art Unit: 2613

data payload (*fig 1; col 2, ln 31-43*); and an interface mechanically and electronically connecting the payload and the satellite health module (*fig 3*).

Geo does not disclose expressly wherein the payload is adapted to communicate between a location in deep space and an Earth user. **Franchini**, from the same field of endeavor, teaches a satellite health module (*frequency acquisition and tracking loop 45, col 3, ln 20-24*) for maintaining a planetoid in an orbit (*inherent to any satellite*); a payload adapted to communicate between a location in deep space and an Earth user (*fig 1; col 2, ln 31-43*); and an interface mechanically and electronically connecting the payload and the satellite health module (*fig 3*).

Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to communicate the payload between a location in deep space and an Earth user onto **Geo**'s system orbiting the sun as taught by **Franchini**. The motivation for doing so would have been to maintain communication with Earth so as to deliver real time data regarding the mission on space.

As to claim 11, **Guo** further teaches wherein the satellite health module further comprises: an attitude control subsystem for maintaining attitude control of the planetoid (*col 6, ln 53-61*); a power subsystem for maintaining power to the planetoid including powering the attitude control subsystem and the payload (*col 6, ln 27-31*); a telemetry, tracking, and commanding subsystem for transmitting planetoid telemetry (*col 7-col 9*), receiving planetoid commands, and enabling tracking of the planetoid (*col 9, ln 42-col 10, ln 20*); and **Franchini** further teaches a thermal subsystem for maintaining a desired temperature on the planetoid (*col 3, ln 20-26*).

As to claim 12, **Franchini** further teaches wherein the payload further comprises: an optical transceiver for transmitting and receiving optical signals (*optical matching ckt 40, with laser 47 and photo diode 41, fig 3*); a radio frequency transmitter (*23, fig 3*) for transmitting radio frequency signals (*22, fig 3*); and an optical to radio frequency converter for converting a signal from optical to radio frequency (*fig 3; col 3, ln 13-52*) and from radio frequency to optical (*fig 2; col 2, ln 44-65*).

As to claim 13, **Guo** further teaches wherein the payload further comprises a memory and a central processing unit (*col 5, ln 43-64 discuss obtaining planetary body images and performing spectral analysis, where memory and central processing unit is inherently required for performing these functions*).

As to claim 14, **Guo** further teaches wherein the payload further comprises a telescope (*col 5, ln 39-42*).

18. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being obvious over **Kintis et al.** (*US005661582A*), as applied to claims 15-19 above, and further in view of **Lynch** (*US006002916A*).

The applied reference (*US006002916A*) has a common inventor with the instant application. However, based upon the earlier publication date of the reference, it qualifies as prior art under 35 U.S.C. 102(b), and therefore, is not disqualified as prior art under 35 U.S.C. 103(c).

Regarding claims 20-22, **Kintis** discloses the method in accordance to claim 15 as discussed above. **Kintis** does not disclose expressly storing the communication signal in the first

Art Unit: 2613

data format or a second data format in a memory, or processing the communication signal.

Lynch, from the same field of endeavor, teaches allocating memory for storing a communication signal (*col 7, ln 63-col 8, ln 8*) so as to enable onboard processing of the communication signal (*col 8, ln 2-8*). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to store **Kintus's** communication signal in the first data format and in the second data format in a memory on the planetoid as taught by **Lynch**, and processing the communication signal on the planetoid as suggested by **Lynch**. The motivation for doing so would have been to enable faster processing, reducing jamming, hacking, and signal interception.

19. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Christopher** (*US 20020181059A1*), as applied to claims 6 above, and further in view of **Examiner's official notice**.

Regarding claim 7, **Christopher** discloses the method in accordance to claim 6 as discussed above. **Christopher** does not disclose expressly wherein the plurality of planetoids are geometrically substantially evenly distributed in the orbit about the sun. **However, examiner takes official notice that it would have been obvious for a person of ordinary skill in the art at the time of invention to evenly distribute the plurality of planetoids in Christopher's system as it is common and well known to evenly distribute a plurality of satellites on an orbit. The motivation for doing so would have been to make enhance communication signal accuracy.**

Art Unit: 2613

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Danny Wai Lun Leung whose telephone number is (571) 272-5504. The examiner can normally be reached on 9:30am-9:00pm Mon-Thur.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DWL
October 25, 2006


JASON CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600